

Chapter 4

An Organizing Framework for Wilderness Values

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Scientists, philosophers, poets, and politicians have defined wilderness in various physical, biological, and metaphysical terms. Following a metaphysical line of thought, wilderness has been described as a subjective "idea" in the mind of the beholder (Oelschlaeger, 1991). The Wilderness Act uses many physical and biological terms to define statutory wilderness as a land area "without permanent improvements or human habitation....which generally appears to have been affected primarily by the forces of nature" and "has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition" (Wilderness Institute, 2004). Thus, according to the Wilderness Act, statutory wilderness is clearly a physical place and not just a metaphysical idea.

Capturing both the physical and metaphysical perspectives, Aplet (1999) defines wilderness as "a place where an idea is clearly expressed: the idea of wilderness." The subjective idea of wilderness is also reflected in the language of The Wilderness Act which indicates that wilderness is a place "retaining its primeval character and influence" where "man himself is a visitor who does not remain" and which has "outstanding opportunities for solitude or a primitive and unconfined type of recreation" (Wilderness Network, 2004).

In this chapter, we are concerned with identifying the types of values wilderness provides as a place and as an idea. When referring to Wilderness in this chapter, we mean statutory or official Wilderness with a big "W" as defined by The Wilderness Act. Included are all the separate federal areas across the country that have been officially designated by Congress as Wilderness areas within the National Wilderness Preservation System (NWPS). This chapter begins by presenting a general organizing framework to identify and inventory the values of designated Wilderness. The framework combines the ecological model of ecosystem structure, functions, and services with scientific and philosophical concepts of value. In subsequent sections, different types of Wilderness values are discussed in more detail. Connections among Wilderness values and concluding comments are offered in the final section.

Wilderness Value Accounts, Attributes, Functions, and Services

In June 2000, a national wilderness values workshop was held in Washington, DC. A primary objective of this workshop was to develop a cross-disciplinary framework for understanding and organizing the values of Wilderness and the various dimensions of these values. Figure 4.1 summarizes the results of workshop discussions and deliberations between ecologists, economists, sociologists, social psychologists, philosophers, wilderness educators, planners, and policy-makers. The framework accounts for the following dimensions of relevance

to identifying, assessing, and measuring Wilderness values: value accounts, Wilderness attributes, Wilderness functions, Wilderness services, and Wilderness values.

Figure 4.1 An organizing framework for Wilderness values

| Basic Functional Connections | Measurement Accounts or Categories | Examples of Measures or Indicators |
|-----------------------------------|--|--|
| Wilderness Values ↑ | Social | Developmental/Health Value Social Identity Value Spiritual Value |
| | Economic | Active Use Value Passive Use Value Economic Impacts |
| | Ecologic | Human Life Support Value Animal and Plant Life Support Value |
| | Ethical | Instrumental Value Intrinsic Value |
| Wilderness Services ↑ | Animal and Plant Habitat Carbon Sequestration Subsistence Living Cultural Preservation Historic Preservation Scientific Discovery Educational Development Personal Physical Health and Growth Personal Emotional Health and Growth Personal Spiritual Health and Growth Community Health and Quality of Life | |
| Wilderness Functions ↑ | Preservation of Natural and Wild Places Recreational and Experiential Setting Ecosystem and Biodiversity Preserve | |
| Wilderness Attributes ↑ | Geographic Geologic Hydrologic Atmospheric Biologic Naturalness Wildness Constructed | |

Value Accounts

Four primary accounts for categorizing Wilderness values, but not in a mutually exclusive manner, are the social, economic, ecologic, and ethical accounts or categories (see Figure 4.1). The social account includes a broad array of anthropocentric values and impacts of Wilderness on individuals and communities not measured in dollar terms. The economic account includes anthropocentric values and impacts of Wilderness on individuals and communities measured in dollar terms. The ecologic account includes biophysical concepts and measures of Wilderness ecosystem health and biodiversity. The ethical account includes philosophical concepts of values and impacts related to fairness, justice, and goodness.

Wilderness Attributes

As mentioned previously, wilderness is both an idea and a place. As a place given special status, Wilderness areas have particular observable attributes or characteristics. These attributes, which are objectively measurable, include geographic area, location, topography, geologic composition, hydrologic composition, climate, atmosphere, fauna, and flora. One of the first steps toward assessing Wilderness values is to inventory the attributes of Wilderness. As indicated earlier, this inventory applies specifically to the attributes of statutory Wilderness designated by Congress as areas within the National Wilderness Preservation System. This inventory can occur at different scales including assessing the attributes of an individual designated Wilderness area, all designated Wilderness areas in a region, or all designated Wilderness in the United States. Various attributes of the current National Wilderness Preservation System are discussed in Chapters 5 and 6.

Wilderness Functions

The objectively measurable attributes of Wilderness areas, such as flora and fauna, water storage and flow, and geographic features, support a number of major functions. These functions or fundamental purposes include preservation of natural and wild places, provision of recreational and experiential settings, and preservation of ecosystem health and biodiversity.

The Wilderness Act clearly recognizes preservation of natural and wild places as one of the functions or fundamental purposes of Wilderness areas. The Act, for example, indicates that a Wilderness area is a place of "primeval character and influence" which is protected and managed "so as to preserve its natural conditions." In the context of the Wilderness Act, natural conditions or naturalness refers to the presence of plants, animals, and physical landscape features in ecosystems that are not being manipulated by humans. In an analysis of the nature of *wildness*, Aplet (1999) explains the degree of wildness in a place is a function of naturalness and "freedom from control." Aplet argues

that Wilderness is a place with a high degree of wildness where high levels of both naturalness and freedom from human management can be observed and experienced. Thus, a unique function or fundamental purpose of Wilderness, as recognized by most authors, is that it preserves high levels of both naturalness and freedom from human interference or control (Aplet, 1999; Godfrey-Smith, 1979; Hammond, 1985; see also Chapters 5 and 6).

The Wilderness Act also clearly recognizes the function of Wilderness as a setting for recreational and other human experiences. The Act, for example, states that Wilderness is a place with "outstanding opportunities for solitude or a primitive and unconfined type of recreation." The experience of "solitude" referred to in the Act may or may not be tied to recreational activities. A solitude experience, for example, may be an outcome of a course or program in personal development or therapy involving visits to a Wilderness area. The function of Wilderness as an experiential setting is also indicated in The Wilderness Act passage stating that Wilderness areas "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." The unique recreational opportunities and therapeutic, scientific, educational, scenic, historical, and cultural experiences supported by Wilderness have been addressed by a number of authors (Aplet, 1999; Godfrey-Smith, 1979; Hammond, 1985; Morton, 1999; Oelschlaeger, 1991; Rolston, 1985; see also Chapters 7, 8, 9, 10 and 12).

In recent years, designation of areas as Wilderness in order to preserve their ecosystem health and biodiversity has gained more attention. The Wilderness Act does not explicitly recognize this function, but it is alluded to in the passage indicating that Wilderness is an area of undeveloped federal land which retains its primeval character and influence and which is protected and managed so as to preserve its natural conditions. The ecological function of Wilderness areas includes preservation of healthy, functioning ecosystems and the support of native biodiversity. Preservation of healthy ecosystems, including perhaps entire ecosystems within the boundaries of a designated Wilderness area, can provide a storehouse of opportunity for scientific observation of a variety of plants and animals and components of regional and even global chemical cycles, such as hydrologic, carbon, and oxygen cycles (Morton, 1999; Noss, 1996; Rolston, 1985; see also Chapters 11 and 12).

Wilderness Services

Wilderness services flow to individual nonhuman and human agents and to communities alike. These services are a result of the functions of Wilderness areas as ecosystem preserves and experiential settings, which are in turn the result of the extant attributes of Wilderness. For example, the function of Wilderness areas to provide *recreational and experiential settings* supports

services such as personal leisure associated with on-site recreational activities and personal healing associated with on-site therapeutic activities.

Wilderness areas also provide a setting where people can contemplate the inspirational qualities of nature and may experience "spiritual revival, moral regeneration, and aesthetic delight" (Godfrey-Smith, 1979; Rolston, 1985). The presence of Wilderness may also contribute to the overall social well-being and quality of life in human communities through recreational, therapeutic, religious, or spiritual activities. The quantity and quality of personal physical, emotional, or spiritual growth; community well-being; and quality of life supported by recreational or therapeutic activities are influenced by the attributes of Wilderness areas where the activities take place.

The function of preserving natural and wild places complements the recreational function of Wilderness. Wilderness areas, for example, provide primitive camping opportunities where one can see and experience wildlands as they once were before westward expansion from the populated East Coast (Hammond, 1985; Morton, 1999; Rolston, 1985). Wilderness recreational experiences characterized by high degrees of both naturalness and freedom from human control also complement the function of providing a setting for personal physical, emotional, and spiritual growth. Wilderness can also provide unique opportunities for scientific discovery and educational development as a natural, outdoor classroom (Aplet, 1999; Godfrey-Smith, 1979; Morton, 1999; Rolston, 1985; Russell, Hendee & Cooke, 1998). In some areas of the United States, such as Alaska, Wilderness may also support subsistence living for Native American populations, and by so doing help preserve Native American cultures.

The function of Wilderness to preserve ecosystem health and biodiversity complements its other two functions, discussed earlier, in the provision of many of the services listed in Table 4.1. For example, preservation of ecosystem health and biodiversity greatly enhances the use of Wilderness as a natural outdoor laboratory and classroom. As well, preservation of ecosystem health and biodiversity may contribute to personal physical, emotional, and spiritual growth through nature-based medicines and personal satisfaction gained from contemplating the existence of well-functioning and biologically diverse ecosystems. Healthy ecosystems also complement the function of preservation of natural and wild places to directly serve nonhuman biological agents through the provision of animal and plant habitat.

As a component of regional and global chemical cycles, Wilderness areas contribute to ecological services such as carbon sequestration. Such ecological services have the potential to affect living organisms over broad geographic and temporal scales. For example, to the extent that carbon sequestration helps to regulate global climate, the carbon stored in or released from Wilderness areas may contribute to both regional and global life support in the short- and

long-run (Costanza & Daly, 1992; Costanza et al., 1997; England, 2000). Values supported by these wilderness services are introduced in the next section.

Wilderness Values

Wilderness areas are part of the natural capital of a region or landscape (Morton, 1999). Natural capital can be defined as an asset composed of objectively measurable attributes, such as flora, fauna and geologic features. These attributes interact to provide major functions, such as chemical cycling. The major functions of natural capital provide asset services to people and all other living organisms, such as oxygen to breathe and water to drink. Like other forms of capital assets (e.g., financial, constructed, human capital), if the attributes and functions of the capital asset are protected and maintained, asset services can be provided on a sustainable basis, unless the service involves depletion of a fixed stock (e.g., crude oil extraction). In the case of Wilderness areas, most natural capital services are derived from renewable resources and therefore are in the nature of sustainable asset flows (Bergstrom & Loomis, 1999; Costanza & Daly, 1992; England, 2000; Morton, 1999).

Natural capital services provide individuals and society with a broad array of benefits. Human, animal, and plant health benefits, for example, are often cited as major reasons for protecting and maintaining ecological services, such as chemical cycling, which are dependent upon natural capital (Costanza et al., 1997; Daly & Cobb, 1994; England, 2000). As a special form of natural capital, the attributes and functions of designated Wilderness areas as defined by the Wilderness Act provide the services illustrated in Figure 4.1. The services from Wilderness provide values which can be organized into the four accounts or categories shown in Figure 4.1; that is, social, economic, ecologic, and ethical.

As illustrated in Figure 4.1, each of the four value accounts can be linked to specific types of value measures or indicators. These measures or indicators originate from different scientific disciplines, each of which has developed its own sets of theories and scientific methods. Under the social account, as discussed in Chapters 7 and 8 of this book, psychologists, sociologists, and anthropologists have developed social concepts of use and nonuse values and quantitative and qualitative ways of accounting for these values. Under the economic account, as discussed in Chapters 9 and 10 of this book, economists have developed economic concepts of use and nonuse values and economic impacts means of measuring these values in dollar terms. Under the ecologic account, and discussed in Chapter 11 of this book, ecologists and other biological scientists include human life support indicators and animal and plant life support indicators. Under the ethical account, as discussed in Chapter 12 of this book, philosophers include instrumental values and intrinsic values.

The Wilderness value accounts shown in Table 4.1 are not necessarily mutually exclusive as more than one discipline may have a perspective on the

most appropriate measure or method for assessing the value of Wilderness. For example, consider the concept of existence value. Existence value for, say, an endangered bird species may be broadly defined as the value ascribed to its continued existence whether or not people are able to see, photograph, or otherwise directly interact with it. The existence value of the bird species, as defined broadly here, could be taken into account under each of the four value accounts shown in Figure 4.1.

Under the social account, the bird's continued existence may provide specific psychological or sociological values to particular individuals or cultures that cannot be quantified in monetary terms. Under the economic account, existence value of the bird species is a specific type of passive use value and could be defined in monetary terms (e.g., willingness-to-pay) to reflect the value an individual places on continued existence of the bird beyond economic values associated with active use in the present or future (e.g., present or future birdwatching activities). Under the ecologic account, continued existence of the bird may be an important indicator of overall ecosystem health and biodiversity needed to support both human and nonhuman life.

Under the ethical account, continued existence of the bird would have both instrumental and intrinsic values. An example of an instrumental value is the value of the bird as an input into generating happiness in a person who enjoys viewing the bird in the field or in pictures. Instrumental values obviously overlap with social and economic values. Intrinsic values of the bird include values of the bird beyond human active or passive use. That is, philosophically, the intrinsic value of the bird is the value that exists even in the absence of people.

In summary, Table 4.1 provides an organizing framework that recognizes the linkages between Wilderness attributes, functions, services, and values. Wilderness attributes support functions, Wilderness functions support services, and Wilderness services support Wilderness values. However, while Table 4.1 implies a linear relationship, the contributions of attributes, functions, and services of Wilderness to specific types of values, such as existence value, are inseparable.

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The Multiple Values of Wilderness

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